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PATENT TRADEMARK OFFICE

# **UTILITY APPLICATION**

**OF**

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**FOR**

**UNITED STATES PATENT**

**ON**

## **APPARATUS AND METHOD FOR BLOCKING A LINK TO AN UNWHOLESOME SITE IN INTERNET**

Docket Number: 01-9366  
Sheets of Drawings: FOUR (4)  
Sheets of Written Description: FOURTEEN (14)  
Express Mail Label Number: EL 130 206 536 US

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# APPARATUS AND METHOD FOR BLOCKING A LINK TO AN UNWHOLESOME SITE IN INTERNET

## FIELD OF THE INVENTION

The present invention relates to an apparatus for and method of blocking a link to an unwholesome site by limiting a connection to a specific Internet site classified into an unwholesome site in order to provide an appropriate Internet connecting service to subscribers.

## BACKGROUND OF THE INVENTION

Recently, Internet technology has been developed in the extent to change a prior life style and a paradigm of thoughts. Each country in the world competitively efforts to increase an activity of Internet use through a construction of super-high speed network, development of various multimedia contents, magnification of competition of communication market, etc., to construct an intellectual information-based society.

Such Internet has been recognized as an excellent field for exchanging information since it provided various and useful information. However, it also has open properties that do not provide a function of sorting user access to the Internet sites, and an opposite effect on causing young people to easy to link to unwholesome sites such as obscenity sites by means of indiscrete construction of sites.

A conventional system for blocking any unwholesome information requires an installation of a unwholesome information blocking software at user's client PC and an installation of a unwholesome information system to LAN in each school or other organizations such as corporations.

The former is a type usually used in homes for limiting the link to an unwholesome site regarding to obscenity products, narcotic drugs, etc. by their parents. Accordingly, if the parents' capability of using computer is less than that of their children, it is substantially impossible to block linking to

unwholesome sites by the children.

The latter is a type that a unwholesome information system is installed in a LAN of a school or other organizations and the unwholesome information blocking server is controlled by the manager of the school or other organizations. Therefore, the latter has a drawback that the consumption of time and expenditure is become great by employment of the full charged manager.

The present invention is made to resolve the problems in the prior art, and an object of the invention is to provide a blocking apparatus for unwholesome sites that the access to unwholesome information is blocked automatically by central control at network provider side when the subscriber requests the service and a method of blocking the unwholesome sites using such apparatus.

Another object of the invention is to provide the blocking apparatus for unwholesome sites and method that the time and expenditure for managing the access at subscriber side can be saved and thereby the subscriber can safely use the Internet.

## SUMMARY OF THE INVENTION

The present invention accomplishes the object by providing an apparatus for blocking unwholesome sites, which comprises a central control center for specifying and providing a control list of unwholesome sites to be blocked and managing a subscriber; a plurality of remote control units disposed between a Internet Service Provider(ISP) and a subscriber for blocking an access to the unwholesome sites on the basis of the control list to be blocked supplied from the central control center when the subscriber attempts to access to unwholesome sites; and a link control network for controlling connection of the plurality of remote control units and the central control center.

The present invention also accomplishes the object by providing a method of blocking an unwholesome site using the above blocking apparatus for

unwholesome sites, comprising of a first step of, when an Internet user subscribes to a link block service, registering information regarding to the user and providing the information to a remote control unit;

a second step of, when the registered subscriber attempts to access to a certain site through Internet, comparing an unwholesome site list made by a central control center and a destination URL, and determining whether the subscriber attempts to access to unwholesome information sites;

a third step of, when the access address of the subscriber is contained in the unwholesome site list, determining that the subscriber attempts to access to the unwholesome sites, and transmitting a message of non-allowance to the subscriber terminal;

a fourth step of, when the access address of the subscriber is not contained in the unwholesome site list, providing a message of allowance to an Internet Service Provider to which the subscriber is registered, and establishing a link between the Internet Service Provider and the subscriber terminal, wherein the second to fourth steps are repeated whenever the subscriber attempts to access on the Internet.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiments of the present invention will be described in conjunction with the accompanying drawings, wherein:

Fig. 1 is a schematic diagram of an apparatus for providing a link block service to an unwholesome information site according to the invention;

Fig. 2 is a block diagram of a central control center in the apparatus shown in Fig. 1;

Fig. 3 is a block diagram of a remote control unit in the apparatus shown in Fig. 1;

Fig. 4 is a schematic diagram showing an example for the construction of a unwholesome information blocking network using the apparatus of the

invention;

Fig. 5 is a flow chart for showing a method for providing a link block service for an unwholesome information site according to the invention; and,

Fig. 6 is a flow chart for showing a construction process of a list of an unwholesome information site.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 shows a schematic diagram for illustrating a connection blocking system to an unwholesome information site on the Internet. The link block system to an unwholesome information system consists of a central control center 10 for constructing and providing a control list for an unwholesome site to be blocked and thereby for managing subscribers, a plurality of remote control units 30 disposed between ISP 50 and subscribers 40 for blocking an attempt to link to an unwholesome site based on the control list for an unwholesome site to be blocked supplied from the central control center 10, a link control network 20 for controlling connection of the central control center 10 and the remote control units 30, and subscribers who have subscribed to the blocking service of unwholesome sites and allowed to Internet connection through the remote control unit 30. Reference number 50 indicates the Internet Service Providers(ISP) who provide an Internet link service.

Fig. 2 is a block diagram of the central control center 10 in the system shown in Fig. 1. The central control center consists of a central control system 11 for searching and recording an unwholesome information site to be blocked in real time and for supplying the recorded list of unwholesome information sites to the remote control units 30 through a link control network 20, a search system 12 for searching out an unwholesome information site in vast information of the Internet and a block list system 13 for classifying, recording, sustaining, managing or changing the Internet site list of the unwholesome information searched out by the search system 12. The search system 12 includes a

automatic search system 12a and a manual search system 12b. The automatic search system 12a consists of a web-robot for extracting all information of documents supplied on the Internet and an expert engine for checking the contents of the information extracted by the web-robot and extracting a list information of the site containing an unwholesome information, and automatically refers to the contents of sites registered into the Internet to extract any sites containing an unwholesome information. The manual search system 12b is to search any site containing unwholesome information by person. The block list system 13 includes a database 13a for storing a list of unwholesome information site to be blocked, collecting an initial data and constructing database by grading the collected data according to URL to be blocked, a classification system 13b for determining whether an associated site is an unwholesome site in the basis of site information supplied from the search system 12 and a management system 13c for managing the recorded unwholesome site list such as category, site rating, representative word, deletion of invalid sites, etc.

The web-robot in the automatic search system 12a extracts all information of documents located on the Internet through Hypertext Transfer Protocol(HTTP), investigates the redundancy of the incoming information and avoids a person from devoting one site for an excessive long time. The expert engine in the automatic search system 12a extracts unwholesome information objects including character, image, moving picture, chats, news groups and FTP downloads and extracts a list information of Internet site including the unwholesome information objects.

The manual search system 12b is to find out an unwholesome information site which can not be found out by the automatic search system 12a. The manual search system 12b operates through a search engine operated by a person who searches on the Internet.

The unwholesome site information output from the automatic search

system 12a or manual search system 12b is input to the block list system 13. The classification system 13b in the block list system 13 determines whether a site is unwholesome or not on the basis of the information from the search system 12 using threshold values defined in every categories. The unwholesome site list determined by the classification system 13b in the above manner is stored in the database system 13a. The database system 13a collects a primitive data through an operation of searching list for URL to be blocked, grades the URL to be blocked and in turn constructs it into database. The management system 13c manages the list of the unwholesome information sites stored in the database system 13a by altering categories, sites, ratings, representative words, etc., and deleting invalid sites. The management system 13c can be operated to add, correct or delete categories, to correct or delete sites determined as an unwholesome site by the classification system 13b, and to register a new site. Additionally, it can search and delete any unwholesome sites among the already constructed lists. It also includes any reviewing processes whether an associated URL is one to be blocked according to a request from a subscriber. In this way, the link block system for an unwholesome information site according to the invention can automatize a task of efficient search of a unwholesome information site and periodic update of the lists.

Fig. 3 is a block diagram of a remote control unit 20 which receives the lists of unwholesome information sites from the central control center 10 and blocks attempts to connect to sites contained in the associated lists by the subscribers. The remote control unit 20 includes a blocking control server 31, coupled to the central control center 10, for specifying a block list and controlling the Internet connection by the subscribers, a connection block list DB 32 for storing the list of unwholesome information sites received from the central control center 10 and an expert engine 33 for analyzing an information utilization type of the subscribers and transmitting the information to the central control

center 10 when the information is one to be blocked.

The blocking control server 31 including a monitoring system 31a specifies the connection block list DB 32 and controls the Internet connection by the subscribers who are registered in the blocking service of unwholesome sites, based on the list. That is, the blocking control server 31 determines whether the connection to an associated ISP 50 is allowed and provides the connection to the ISP 50 if it is not the sites to be blocked. The expert engine 33 inspects the information of the sites to which the subscribers attempt to connect and notices to the central control center 10 when it determines as the information to be blocked.

The unwholesome information blocking network shown in Fig. 4 can be constructed by applying the link blocking apparatus of unwholesome information sites constituted as described above.

According to the unwholesome information blocking network shown in Fig. 4, the subscribers consisting of personal computers at home or LAN typically constructed in schools or corporations are connected to the access server through PSTN/ISDN, xDSL, wireless networks or optical/coaxial cables. The access server is in turn connected to the Internet Service Provider(ISP) who provides an Internet connection service through the unwholesome information blocking network, i.e. link control network including the remote control unit 30 of the link blocking apparatus according to the invention.

Therefore, among the subscribers' requests to connect to predetermined sites, the requests for connecting to sites contained in the unwholesome site list provided from the central control center are blocked and the requests for connecting to sites being not contained in the unwholesome site list are transmitted to the Internet Service Provider(ISP) according to the unwholesome site information from the central control center, thereby allows the connections to the associated sites.



Fig. 5 is a flow chart for explaining a method of providing a link block service to unwholesome information sites using the link block system of the unwholesome information sites according to the present invention.

As shown in Fig. 5, when an individual person or an organization such as schools and corporations subscribes to the unwholesome site link block service provided by the above described apparatus (step S501), the information of the subscriber is registered in the central control center 10 (step S502) and the central control center 10 provides the registered customer's information to the remote control unit 30 (step S503).

After completing the subscriber's register process as above step S501 to S503, when the subscriber attempts to the connection through the own terminal (step S504), the connection is made to the unwholesome information blocking network consisting of the remote control unit 30 and the link control network 20 through the access server as shown in Fig. 4 (step S505).

When the subscriber attempts to connect this way, the remote control unit 30 determines whether the connecting person is registered to the link block service, compares unwholesome site list specified by the central control center 10 with the destination URL and determines whether the subscriber attempt to connect to an unwholesome information site (step S506).

If the destination URL is the one contained in the list of unwholesome sites, it is determined that the subscriber attempts to connect to the unwholesome information site. Then, the remote control unit 30 transmits a message indicating non-allowance and stores in a log file (step S507).

In contrast, if the destination URL is not the one contained in the list of unwholesome sites, the remote control unit 30 transmits the connecting information to the Internet Service Provider(ISP) 50 in which the customer subscribed and allows the desired Internet connection (step S508). After the connection, the subscriber can do Internet surfing to the associated sites (step

S509).

The above steps S506 to S509 are repeated whenever the subscriber changes the URL address and it prohibits a subscriber to connect to unwholesome sites.

In the above description, it is necessary to specify the lists of the unwholesome sites to provide more reliable block of connection to the unwholesome sites.

Fig. 6 shows a process of specifying the list of the unwholesome sites performed in the link block system to unwholesome information sites on the Internet according to the invention.

According to the flow chart in Fig. 6, the central control center 10 constitutes an initial control list DB (step S601). Then, the central control center 10 inspects whether the control list contains unwholesome information by means of automatic search by the automatic search system 12a or manual search by the manual search system 12b (step S 602). The central control center 10 in turn classifies the control list to be blocked into unwholesome sites and wholesome sites and further classifies it by rating of unwholesome level based on the search results. Additionally, it updates the control list DB by changing the control list to the converted list according to the search results and classified results, and repeats the process of updating the control list DB by checking the validity of the control list (step S605) and deleting invalid sites. In this way, the control list to be blocked is specified.

The above described apparatus and method of blocking the connection to unwholesome sites on the Internet provide the service for blocking the connection to the unwholesome information sites by central control as an additional service of the network, thereby block any access to an unhealthy data by young people at home or in school and allow the utilization of the Internet as a storehouse of healthy knowledge for education. It is also possible to manage the employees by

limiting the use of the Internet for unnecessary work in the office such as dealing in bonds and securities.

As described above, the apparatus and method according to the present invention can efficiently block access to an undesirable information site without the necessity of controlling the Internet connection individually at home, school or office, thereby can reduce time and costs for controlling the Internet connection. Also, since the access to an undesirable unwholesome site is blocked by the central control, parents and managers can permit the use of the Internet to children and employees without anxiety. Therefore, according to the invention, the Internet can be utilized in more healthy and educational purposes.